Kristu Jayanti College
AUTONOMOUS Bengaluru
Reaccredited 'A' Grade by NAAC | Affiliated to Bengaluru North University

FACULTY OF SCIENCES

B. Sc. Biotechnology, Biochemistry, Genetics

Programme Educational Objectives

PEO1: To acquire theoretical and practical knowledge in Biotechnology, Biochemistry and Genetics

PEO2: To instill scientific temperament to contribute to human development.

PEO3: To empower the students with employability skills and professional ethics.

Programme Outcomes

After the successful completion of the 3 year B.Sc. BBG Programme, the graduate will be able to:

PO1: Apply professional and social skills to cater to the needs of the industry, society and global scientific community.

Programme Specific Outcomes

After the successful completion of the 3 year B.Sc. BBG Programme, the graduate will be able to:

PSO1: Appraise national and global issues in Biological Sciences.

PSO2: Perform effectively with professional ethics in the domains of Biotechnology, Biochemistry and Genetics.

Programme Matrix: Bachelor of Science- Biotechnology, Biochemistry and Genetics [2019 Batch]

I - SEMESTER

Course Type	Course Code	Course Title	Course Outcomes
MIL [Any ONE to be Opted]			
AECC	**AEN103A11**	**Additional English I**	1. Describe and differentiate between ballads and sonnets 2. Analyze critically the writing style of prose writers 3. Develop interest to appreciate one act plays 4. Apply the rules of punctuation to write concisely 5. Demonstrate proficiency in creating leaflets and brochures
AECC	**HIN103B11**	**Hindi I**	1. हिंदी साहित्य के गद्य विधाओं को विश्लेषण करने की क्षमता का विकास 2. विद्यार्थियों में सामाजिक यथार्थ का मूल्यांकन करने का ज्ञान 3. सृजनात्मक कौशल्य में परिपूर्णता 4. गद्य विधाओं का अध्ययन करने के बाद सामाजिक मूल्यों का ज्ञान प्राप्त 5. अनुवाद कला और भाषा में परिशुद्धत
AECC	**KAN103B11**	**Kannada I**	1. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ತಿಳಿಯುವರು. 2. ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು 3. ಅಳವಡಿಸಿಕೊಳ್ಳುವರು. 4. ಭಾಷಾ ಕೌಶಲ್ಯಗಳನ್ನು ಮೆರುಗುಗೊಳಿಸಿಕೊಳ್ಳುವರು
Compulsory Courses			
AECC	**ENG103A11**	**English I**	1. Demonstrate ability to identify nuances of prose and poetry 2. Develop the skill to appreciate prose and poetry 3. State the basic concepts of grammar and its usage 4. Develop communicative skills and become competent users of English in real life situations
DSCC	**BTG203A11**	**Biotechnology I [Cell Biology]**	1. Explain the structure of prokaryotic and eukaryotic cells, functions of the cell and the fundamentals of microscopy. 2. Review the structural and functional organization of cell organelles. 3. Appraise the mechanisms of cell motility. 4. Relate to the mechanism of cell division and programmed cell death
DSCL	**BTG2L1A11**	**Biotechnology Practical I**	1. Demonstrate the use of a compound microscope and micrometer. 2. Adopt staining techniques to observe mitosis and meiosis. 3. Perform the experiments to isolate chloroplast, nucleus and staining of mitochondria.
DSCC	**BCH203A11**	**Biochemistry I [Biophysical Chemistry]**	1. Describe the fundamentals of atomic structure and properties of elements based on periodic table. 2. Explain the properties of chemical bonds and hybridization patterns. 3. Apply the concept of acids and bases in determining the ph and list the applications of electrochemical series. 4. Summarize the principles and applications of adsorption, surface tension and viscosity. 5. Illustrate the detection and measurement of radioactivity and its applications.

DSCL	**BCH2L1A11**	**Biochemistry Practical I**	1. Perform titrimetric estimations using standard solutions. 2. Demonstrate experiment to determine the hardness of water. 3. Execute gravimetric estimations of sulphate and magnesium.
DSCC	**GEN203A11**	**Genetics I [Principles of Genetics]**	1. Explain the progression from Classical to Modern Genetics 2. Sketch Mendel's experimental design and familiarize with classical genetic terminologies 3. Interpret Mendel's principles of segregation, independent assortment and genetic outcomes utilizing branch diagrams and Punnett squares 4. Differentiate gene interactions 5. Appraise the chromosomal, hormonal and environmental modes of sex determination
DSCL	**GEN2L1A11**	**Genetics Practical I**	1. Perform dissection to display floral parts of *Pongamia* and *Zea mays* 2. Execute temporary slide preparation and identification of stages in Mitosis using onion root tips 3. Demonstrate the method of media preparation for *Drosophila* culture and blood grouping using human blood sample

II - SEMESTER

Course Type	Course Code	Course Title	Course Outcomes
MIL [Any ONE to be Opted]			
AECC	**AEN103A21**	**Additional English II**	1. Explain the meaning of select poetry, prose, and drama of writers from India, England, Chile, France, Nigeria, and Canada by placing the texts in the cultural context 2. Analyze the issues of race, problems faced by fisher community and women, futility of war, societal fabrications, Nazism, religion, spirituality, partition, and the political tensions in professional field 3. Relate and frame opinions on racial issues, war, struggles of women and the marginalized community 4. Interpret film text 'Life is beautiful' and learn the historical background of the reign of Hitler and the injustices in concentration camps 5. Solve questions on idioms, super ordinates, and hyponyms
AECC	**HIN103B21**	**Hindi II**	1. काव्य अध्ययन में संगीतात्मक शौली को समझ लेता है 2. काव्य को विश्लेषण करने की क्षमता 3. काव्य में निहित विचारों का मूल्यांकन 4. काव्य सृजन करने का कौशल्य 5. व्याकरणिक भाषा का ज्ञान एवं स्पष्टता
AECC	**KAN103B21**	**Kannada II**	1. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ತಿಳಿಯುವರು. 2. ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವರು. 3. ಭಾಷಾ ಕೌಶಲ್ಯಗಳನ್ನು ಮೆರುಗುಗೊಳಿಸಿಕೊಳ್ಳುವರು.
Compulsory Courses			
AECC	**ENG103A21**	**English II**	1. Discuss the use of animal imagery and hypersensitive characters in the twentieth century writings 2. Describe poetic style and its devices in the English verses of the Victorian Age 3. Analyze poems and sonnets regarding existentialist and metaphysical themes 4. Discover and implement new strategies of grammar in speaking English language 5. Integrate the prominence of media and the elements of advertising by creating media awareness
AECC	**NES102A01**	**Environmental Science**	1. Discuss the overexploitation of natural resources. 2. Appraise the components of the ecosystem. 3. Assess the conservation of biodiversity. 4. Criticize the mitigation process of natural disasters. 5. Survey the effects of pollution in the environment. 6. Recommend the various policies for the betterment of the environment.

DSCC	**BTG203A21**	**Biotechnology II[General Microbiology]**	1. Explain the fundamentals of microscopy, staining and sterilization used in microbiology. 2. Appraise the essential concepts of microbial nutrition and growth. 3. Summarize the structure and life cycle of a virus. 4. Describe the ultrastructure of bacteria. 5. Illustrate the characteristics, classification and reproduction of fungi and algae.
DSCL	**BTG2L1A21**	**Biotechnology Practical II**	1. Demonstrate safety measures, instrumentation and sterilization methods in a microbiology laboratory. 2. Formulate media for the isolation, culture and enumeration of microorganisms. 3. Perform fundamental staining techniques and biochemical tests for the identification of bacteria and fungi. 4. Execute antibiotic sensitivity test to study microbial resistance
DSCC	**BCH203A21**	**Biochemistry II[Biomolecules]**	1. Infer the spatial configuration and structural forms of biomolecules. 2. Classify carbohydrates, amino acids, lipids, nucleic acids, vitamins and minerals. 3. Assess physical and chemical properties of carbohydrates, amino acids and lipids. 4. Illustrate the biological importance of biomolecules. 5. Explain denaturation, renaturation and packing properties of DNA.
DSCL	**BCH2L1A21**	**Biochemistry Practical II**	1. Perform qualitative analysis of sugars. 2. Execute qualitative analysis of amino acids.
DSCC	**GEN203A21**	**Genetics II [Cell structure and Dynamics]**	1. Appraise properties of cells and principles of microscopy 2. Summarize the ultrastructure of prokaryotic cell and cell motility 3. Illustrate the ultrastructure of eukaryotic cell, structure and function of organelles 4. Appraise the mechanism of biogenesis of mitochondria, chloroplast, endoplasmic reticulum and golgi complex 5. Describe the stages in cell cycle, cell division and mechanism of programmed cell death.
DSCL	**GEN2L1A21**	**Genetics Practical II**	1. Execute differential staining of *Paramoecium* and Yeast. 2. Execute temporary slide preparation and identification of stages of Mitosis and Meiosis using *Fenugreek* and *Rhoeo discolour*. 3. Demonstrate the experiment to isolate chloroplast.

III Semester

Course Type	Course Code	Course Title	Course Outcomes
MIL [Any ONE to be Opted]			
AECC	**AEN103A31**	**Additional English III**	1. Appreciate the theme of love and suspense in the works of Alfred Noyes, Robert Southey, Sir Arthur Conan Doyle and Shakespeare 2. Discover the sufferings of human being in the works of Tagore, Mary Fisher, Charley Chaplin, John Stainbeck and Philip Larkin 3. Analyses the dramatic techniques in the prescribed one act play 4. Outline the difference between essay writings and precis writing 5. Develop the interest on poem and prose
AECC	**HIN103B31**	**Hindi III**	1. हिंदी कविता और खंडकाव्य के भेद को समझलेता है 2. पौराणिक कथा का विश्लेषण करता है 3. पौराणिक काव्य में आदर्श विचारों का अनुकरण करता है 4. आधुनिक और पौराणिक विचारो का मूल्यांकन 5. काव्य सृजन शौली का विकास
AECC	**KAN103B31**	**Kannada III**	1. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ತಿಳಿಯುವರು. 2. ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವರು. 3. ಭಾಷಾ ಕೌಶಲ್ಯಗಳನ್ನು ಮೆರುಗುಗೊಳಿಸಿಕೊಳ್ಳುವರು
Compulsory courses			
AECC	**ENG103A31**	**English III**	1. State the problems of a man and the significance of parental affection in real life. 2. Review the historical background of true events in roman history. 3. Extrapolate the reflections on the lives of writers in literary genres. 4. Interpret the significance of English literature in the forms of movies and serials in media. 5. Formulate the structure of oral and written presentations and develop speaking skills.
DSCC	**BTG203A31**	**Biotechnology III [Bioinstrumentation and Biostatistics]**	1. Describe the methods of centrifugation and electrophoresis. 2. Illustrate the working principle and applications of spectroscopy. 3. Appraise the principles, methods and applications of adsorption and partition chromatography. 4. Relate to the significance of measures of central tendency, dispersion, hypothesis testing and probability in analyzing biological data.

DSCL	**BTG2L1A31**	**Biotechnology Practical III**	1. Perform paper chromatography for the separation of amino acids and leaf pigments. 2. Execute isolation of DNA and separation by gel electrophoresis. 3. Demonstrate bacterial growth curve by colorimetry
DSCC	**BCH203A31**	**Biochemistry III [Bioanalytical Techniques]**	1. Summarize the principle and applications of centrifugation, chromatography, electrophoresis. 2. Describe the instrumentation and applications of spectroscopy. 3. Illustrate the usage of different types of biosensor
DSCL	**BCH2L1A31**	**Biochemistry Practical III**	1. Formulate citrate and phosphate buffers. 2. Demonstrate the separation of amino acids using paper and thin layer chromatography. 3. Execute gel electrophoresis for the separation of nucleic acids and proteins.
DSCC	**GEN203A31**	**Genetics III [Cytogenetics]**	1. Explain the organization of eukaryotic chromosome, chromosome ultrastructure and giant chromosomes 2. Appraise the concept of linkage and chromosomal non-disjunction 3. Interpret the mechanism of crossing over and its significance 4. Examine structural and numerical chromosomal aberrations and the consequences 5. Compare the extra chromosomal inheritance patterns in mitochondria, chloroplast, *paramoecium*, *drosophila* and plants
DSCL	**GEN2L1A31**	**Genetics Practical III**	1. Demonstrate media preparation, culture and maintenance, identification of mutants and mounting of sex comb in *Drosophila* 2. Perform the dissection of salivary gland and preparation of polytene chromosome 3. Execute temporary slide preparation to identify chromosomal translocation in *Rhoeo discolor*

IV Semester

Course Type	Course Code	Course Title	Course Outcomes
MIL [Any ONE to be Opted]			
AECC	**AEN103A41**	**Additional English IV**	1. Interpret select poems of Robert Frost, Sarojini Naidu and William Blake. 2. Explain the style and significant features of prose writings of R. K Narayan, Willa Cather, Doris Lessing, O. Henry, and Booker. T. Washington. 3. Compare the ethical and cultural differences in Wole Soyinka's play 'The Lion and the Jewel' and learn the unique native culture of Nigeria. 4. Assess the issues related to marriage, education, moral code of conduct, the concept of sublime, modernity, tradition, and the mindsets of human beings in life. 5. Appraise the literary devices and techniques used in poetry and prose. Formulate grammatically correct sentences using proper punctuations. 6. Create citations of books, articles and journals using MLA format 8th edition.
AECC	**HIN103B41**	**Hindi IV**	1. हिंदी व्यंग्य अध्ययन करने की शौली को समझलेता है 2. व्यंग्य में निहित विचारों का विश्लेषण 3. व्यंग्य कथाओं में अभिव्यक्त विचारों का मूल्यांकन 4. निबंधों में निहित आदर्श विचारों का अनुकरण 5. व्यंग्य सृजन कौशल्य का विकास
AECC	**KAN103B41**	**Kannada IV**	1. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ವಿವಿಧ ಪ್ರಕಾರಗಳನ್ನು ತಿಳಿಯುವರು. 2. ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವರು. 3. ಭಾಷಾ ಕೌಶಲ್ಯಗಳನ್ನು ಮೆರುಗುಗೊಳಿಸಿಕೊಳ್ಳುವರು
Compulsory Courses			
AECC	**ENG103A41**	**English IV**	1. Recognize, define, and identify poetic terms and genres. 2. Examine novels analytically and interpretively, to identify literary elements like plot, character, setting, tone, point of view, theme, style, symbol, metaphor, and image. 3. Analyze the characters and themes of one act plays. 4. Acquire vital employability skills and employment opportunities with in-depth knowledge of CV, cover letter, report writing and paragraph writing.
DSCC	**BTG203A41**	**Biotechnology IV [Molecular Biology]**	1. Appraise the structure and functions of nucleic acids, DNA replication and repair mechanisms. 2. Summarize the events and mechanism of protein synthesis. 3. Describe the concepts and process of gene regulation in prokaryotes and eukaryotes.
DSCL	**BTG2L1A41**	**Biotechnology Practical IV**	1. Adopt a method to estimate nucleic acids. 2. Perform chemical lysis of RBC. 3. Execute precipitation and estimation of proteins from animal or plant source.
DSCC	**BCH203A41**	**Biochemistry IV [Human Physiology]**	1. Explain the structure, defect and mechanistic interplay of photo pigments of the eye. 2. Describe the components of blood and mechanism of respiration.

			3. Infer the process of human digestion and excretion illustrate the mechanism of muscle contraction and neurotransmission. 4. Relate anatomy and endocrinology of the reproductive system.
DSCL	**BCH2L1A41**	**Biochemistry Practical IV**	1. Adopt methods to estimate nucleic acids, proteins and glucose. 2. Demonstrate prothrombin time and erythrocyte sedimentation rate to analyze blood clot formation.
DSCC	**GEN203A41**	**Genetics IV [Molecular genetics]**	1. Describe the structure and function of DNA and RNA, types of DNA and replication 2. Sketch the organization of the genome in virus, prokaryotes and eukaryotes 3. Illustrate the process of genetic recombination in Prokaryotes, *Drosophila* and Maize. 4. Explain the molecular basis of mutation and DNA repair mechanisms 5. Appraise the applications of molecular genetics in disease diagnosis, gene therapy and transgenic technology
DSCL	**GEN2L1A41**	**Genetics Practical IV**	1. Demonstrate genomic DNA extraction from bacteria, coconut endosperm and liver tissue 2. Perform paper chromatography to separate eye pigments from *Drosophila*
NCCC	**LSE5A2A41**	**Life Skills Education**	1. Analyze the emotional competence at the work place. 2. Design the empathy map for the people.

V Semester

Course Type	Course Code	Course Title	Course Outcomes
DSCC	**BTG203A51**	**Biotechnology V [Genetic Engineering]**	1. Illustrate the steps and role of enzymes in gene cloning and construction of gene libraries. 2. Review the importance of vectors and host systems in gene cloning. 3. Compare the physical, chemical, and biological methods of genetic transformation. 4. Appraise the techniques of blotting, sequencing, DNA synthesis and amplification.
DSCL	**BTG2L2A51**	**Biotechnology Practical V**	1. Master the procedures for isolation of genomic DNA from microbial, plant and animal sources. 2. Perform isolation and purification of plasmid DNA. 3. Execute spectrometric quantification of DNA and separation by gel electrophoresis. 4. Demonstrate competent cell preparation for bacterial transformation and follow screening and selection of transformants.
DSCC	**BTG203A52**	**Biotechnology VI [Immunology and Animal Biotechnology]**	1. Differentiate humoral and cell mediated immune responses, and the cells and organs involved in immunity. 2. Illustrate the mechanisms and applications of antigen and antibody interactions. 3. Appraise the concepts of vaccination and immunization. 4. Review the principles and applications of animal cell culture.
DSCL	**BTG2L2A52**	**Biotechnology Practical VI**	1. Perform blood grouping, differential count of WBC, Widal and venereal disease research laboratory tests. 2. Demonstrate agglutination and precipitation reactions. 3. Perform mechanical disintegration of liver tissue for primary culture. 4. Execute serum separation from blood and precipitation of immunoglobulins.
DSCC	**BCH203A51**	**Biochemistry V[Advanced Bio molecular Chemistry]**	1. Assess the functions of biomolecules in cell organelles. 2. Classify carbohydrates, amino acids, lipids and its structural configuration 3. Illustrate properties and biological importance of biomolecules 4. Composition, functions and structure of membrane models. 5. Analyze the concept of bioenergetics in spontaneous biochemical reactions.
DSCL	**BCH2L2A51**	**Biochemistry Practical V**	1. Trace the concentration of blood glucose, amino acids, calcium and ascorbic acid in biological samples. 2. Adopt method to prepare casein and starch. 3. Demonstrate experiment to check the quality of lipid.

DSCC	**BCH203A52**	**Biochemistry VI [Enzymes and Enzyme Technology]**	1. Explain classification, properties, characterization and mechanism of enzymes. 2. Illustrate the kinetics involved in inhibition and regulation of enzymes. 3. Appraise the role of coenzymes, cofactors in the action of enzymes. 4. Assess the industrial production of enzymes from biological sources and enzyme immobilization. 5. Illustrate the applications of enzymes in clinical diagnosis.
DSCL	**BCH2L2A52**	**Biochemistry practical VI**	1. Demonstrate the preparation of crude enzymes. 2. Execute enzyme assay of amylase and acid phosphatase. 3. Perform optimization of factors affecting enzyme activity.
DSCC	**GEN203A51**	**Genetics V [Developmental Biology and Genetics]**	1. Illustrate the fundamental process of early development in animals and plants 2. Interpret the differential gene expression during early development 3. Describe the processes in human embryogenesis 4. Associate human developmental abnormalities with teratogens
DSCL	**GEN2L2A51**	**Genetics Practical V**	1. Perform the mounting and shell-less culture of chick embryo and identify the developmental stages 2. Demonstrate the dissection and mounting of imaginal discs of *drosophila* 3. Demonstrate the sectioning of animal and plant tissues using microtomy
DSCC	**GEN203A52**	**Genetics VI [Basic Human Genetics]**	1. Outline the nomenclature of human chromosomes and the role of flow karyotyping and Fluorescence Activated Cell Sorting (FACS) in chromosome analysis. 2. Relate inheritance patterns to human genetic disorders. 3. Interpret genetic control in immunity and transplantation. 4. Describe the role of oncogenes, tumor suppressor genes and chromosomal aberrations in carcinogenesis. 5. Appraise the fundamentals in genetic counselling, dermatoglyphics, prenatal diagnosis, gene therapy and stem cell therapy.
DSCL	**GEN2L2A52**	**Genetics Practical VI**	1. Trace the relationship of Mendelian traits in a population 2. Create a karyogram and distinguish normal and abnormal human karyotypes 3. Demonstrate preparation of blood smear to observe sex chromatin body in Neutrophils and blood cell counting using Haemocytometer 4. Construct pedigree chart and interpret inheritance pattern 5. Adopt rolling finger method to record and quantify finger print patterns.
NCCC	**EEC5A2A51**	**Extra-Curricular and Extension Activities as per Annexure II**	1. Adopt self-awareness, empathy, creative thinking, critical thinking, coping with emotions and stress for intra-personal effectiveness 2. Develop communication skills, interpersonal skills, problem solving and decision making skills for interpersonal effectiveness

VI Semester

Course Type	Course Code	Course Title	Course Outcomes
DSCC	**BTG203A61**	**Biotechnology VII [Plant and Environmental Biotechnology]**	1. Appraise the sterilization techniques, culture methods and generation of variants in plant tissue culture. 2. Illustrate the methods of plant transformation and its applications. 3. Explain the importance of intellectual property rights in biotechnology. 4. Summarize the application of biotechnology in the production of energy, fertilizers and extraction of minerals. 5. Justify the importance of conventional and biotechnological methods of waste management and bioremediation.
DSCL	**BTG2L2A61**	**Biotechnology Practical VII**	1. Follow aseptic and sterilization techniques in plant tissue culture. 2. Demonstrate Murashige and Skoog media preparation, seed culture, callus culture, axillary and apical bud culture. 3. Perform protoplast isolation and synthetic seed preparation. 4. Execute biological oxygen demand, total dissolved solid and most probable number to check water quality.
DSCC	**BTG203A62**	**Biotechnology VIII [Industrial Biotechnology]**	1. Appraise the process of screening and selection of industrially important microorganisms. 2. Illustrate the process of fermentation. Compare the design and functioning of fermentors. 3. Integrate the techniques of downstream processing for the separation and purification of products. 4. Sketch the production of alcoholic beverages, organic acid, antibiotic, amino acid, vitamin, enzyme, fermented foods and single cell protein.
DSCL	**BTG2L2A62**	**Biotechnology Practical VIII**	1. Perform culture of Spirullina, Agaricus, Yeast and Aspergillus. 2. Execute citric acid, lactic acid, lactose and alcohol estimation. 3. Demonstrate immobilization of yeast cells using gel entrapment. 4. Execute wine preparation
DSCC	**BCH203A61**	**Biochemistry VII [Intermediary Metabolism]**	1. Relate the process of anabolism, catabolism with metabolic pathways in cells and energy conservation. 2. Describe the pathways involved in synthesis of biomolecules. 3. Summarize the metabolic pathway and energetics involved in carbohydrates, proteins, lipids and nucleic acids. 4. Explain the role of the electron transport chain in cellular respiration.

DSCL	**BCH2L2A61**	**Biochemistry Practical VII**	1. Demonstrate the concentration of glycogen from the liver. 2. Perform an experiment to estimate glucose, ketoses, nucleic acid from biological samples. 3. Adopt a method to estimate chlorophyll from green leaves.
DSCC	**BCH203A62**	**Biochemistry VIII [Clinical Biochemistry]**	1. Describe the biochemical basis of disorders due to errors in carbohydrate, lipid, amino acid & nucleic acid metabolism. 2. Illustrate the clinical manifestations of metabolic disorders. 3. Interpret the gastric, pancreatic and intestinal function test. 4. Analyze the types of liver and kidney function test for diagnosis.
DSCL	**BCH2L2A62**	**Biochemistry Practical VIII**	1. Perform the biochemical tests to determine the level of urea and uric acid from the clinical sample. 2. Trace the levels of liver function enzymes. 3. Adopt a method to estimate the level of blood glucose and cholesterol.
DSCC	**GEN203A61**	**Genetics VII [Population and Biometric Genetics]**	1. Trace the phylogenetic relationship and evolution of *Homo sapiens* 2. Describe the theories of biological evolution and mechanisms of speciation. 3. Relate the effect of evolutionary agents on Hardy-Weinberg equilibrium. 4. Illustrate the principle and mechanism of quantitative inheritance. 5. Appraise the effect of polygenes on the phenotype.
DSCL	**GEN2L2A61**	**Genetics Practical VII**	1. Perform the estimation of allele and genotype frequencies of MN Blood type, effect of selection and genetic drift in a population. 2. Adopt rolling finger method to record and quantify finger print pattern of Downs and Klinefelter's syndrome. 3. Construct pedigree chart and interpret inheritance pattern in genetic disorders 4. Solve the problems on quantitative inheritance and heritability.
DSCC	**GEN203A62**	**Genetics VIII [Applied Genetics]**	1. Explain the Germplasm activities and importance of Biodiversity conservation 2. Describe the methods and applications of breeding in animals, concept of Heterosis and hybrid vigour in plants 3. Summarize the methods of plant tissue and animal cell culture 4. Appraise the application of genetics in production of biopharmaceuticals, diagnostic kits, molecular markers and forensic science 5. Describe the fundamentals of bioinformatics and biological databases.
DSCL	**GEN2L2A62**	**Genetics Practical VIII**	1. Demonstrate pollen fertility in *Catharanthusroseus* and *Hibiscus rosa-sinensis.* 2. Perform WIDAL and VDRL tests using diagnostic kits. 3. Adopt BLAST and FASTA tools to interpret the homology of DNA and protein sequence. 4. Execute the protocol and isolate protoplast
DSEP	**LSC2P2A61**	**Project**	1. Demonstrate sound knowledge and skills on the research topic 2. Design and conduct experiments individually

			3. Interpret the results of research 4. Report research findings orally and in manuscripts